NEWSLINE

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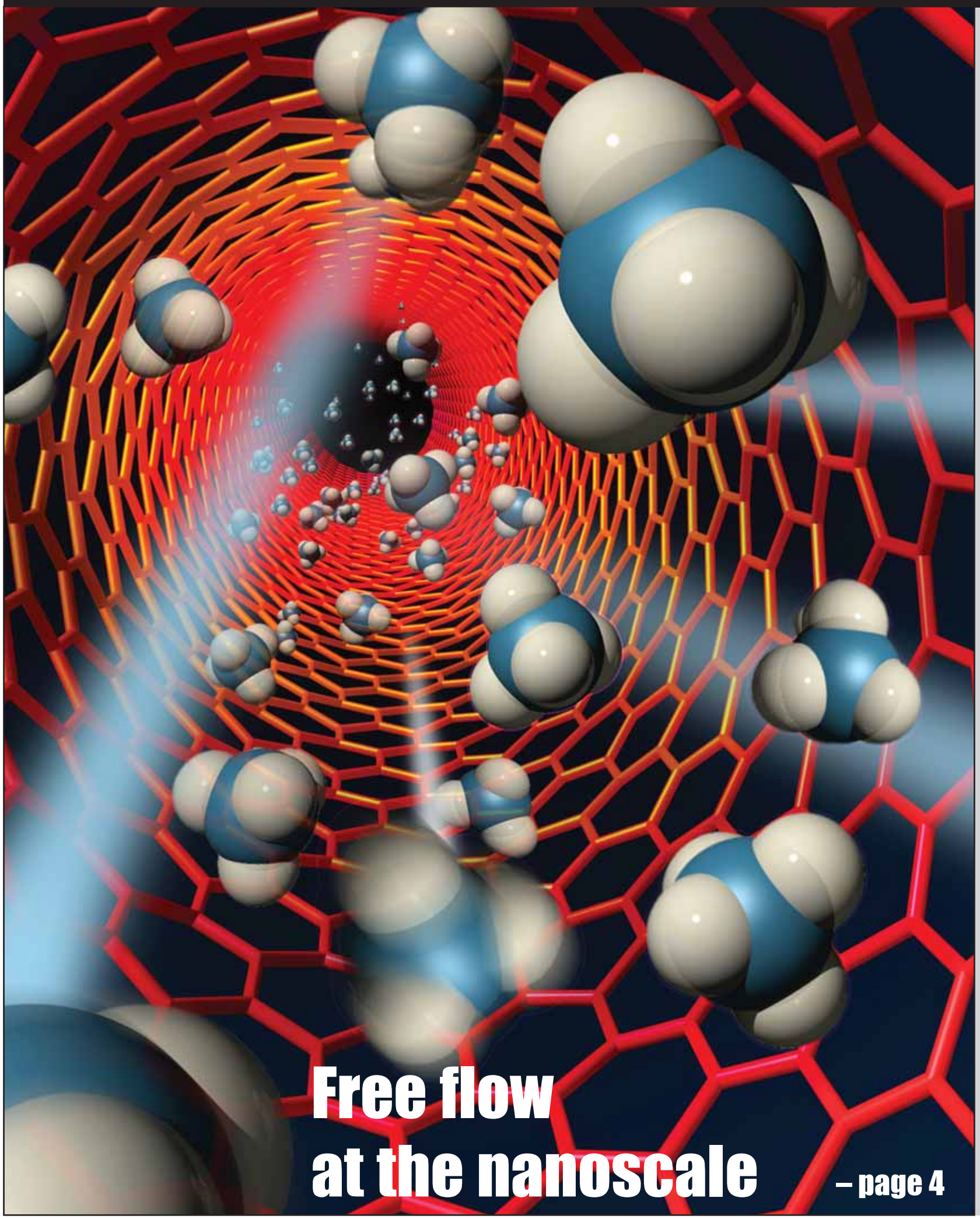

Free flow at the nanoscale

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WHAT'S INSIDE

LAB ANNOUNCEMENTS

Brooks assures employees 'we're going to do this right'

By Don Johnston
Newsline staff writer

Ambassador Linton Brooks, National Nuclear Security Administration administrator, discussed Thursday the NNSA budget and the Reliable Replacement Warhead program and fielded questions about the Lab's contract competition and transition to a new contractor during an all-hands meeting at the Laboratory.

Brooks was in Livermore for an interview, to meet with the staff of the NNSA's Livermore Site Office and to participate in the farewell tribute to former LLNL Director Michael Anastasio.

In his opening remarks Brooks lauded the Laboratory's work on the Reliable Replacement Warhead (RRW). "I've been congratulating different parts of the Laboratory. There's a part of the Lab that has been doing some intellectual work on the RRW design. I've just had an opportunity to look at some of that and it's just spectacular work," he said. "I've been telling people that this will be looked at as a transformational moment 15 years from now."

Brooks also congratulated the people at the Lab for the "enormous amount of hard work" that went into restarting the Plutonium Facility in Bldg. 332. "I want you to know we appreciate the work that went into this."

Turning to "budget season in Washington," Brooks was optimistic about the FY07 budget for Laboratory programs. "If you look only at the totals, we're doing well. The totals are essentially the President's budget."

However, congressional appropriations committees may still move money around as the budget process plays out, Brooks said. "But, overall we're going to be fine on the budget this year."

Brooks sought to allay employee fears of dramatic changes to pensions and benefits under a new contractor. Asked if current Lab employees would be considered new employees once a contractor is chosen, he replied: "No one in this room will be considered new employees when the contract changeover occurs.

"Somebody either misunderstood a question or misunderstood the policy and got a rumor floating around here that when the contract changes you'd all be new employees," he said. "But that's just not right."

As far as changes to pension plans, Brooks said: "The intent of the NNSA pension policy is to go as far as the law will allow to grandfather in existing arrangements we have with people, but to recognize that those arrangement have gotten increasingly far from the marketplace. And therefore take people who start their career after a fixed date and put them on a newer system."

JACQUELINE MCBRIDE/NEWSLINE

Linton Brooks

What is different about the changes DOE has made to pension policy is not pensions, Brooks said. "But, what's different is that we're grandfathering the medical benefits for people who are working here. That's not common."

The ambassador noted that lessons from the Los Alamos contract competition and transition are being used to improve the process for Livermore, though "the transition is going to be hard no matter who wins the competition."

Acknowledging that the Los Alamos transition was "very traumatic … the Los Alamos transition has, in my view, gone superbly well," Brooks said, attributing much of the success of the transition to Interim Los Alamos Director Bob Kuckuck (former LLNL deputy director for Operations).

In concluding his presentation Brooks said: "It's important that as we move into a time of turbulence — and competition and transition are times of turbulence — I convey to you that we're going to do this right.

"It important for you to understand the enormous value that we place on the work done at Livermore," Brooks said. "There's a reason we speak of the three weapons labs as crown jewels; there's a reason why when people talk about great science they inevitably come back to something that was enabled or performed at the weapons labs; and there's a reason American science is the envy of the world. Much of that reason is embodied at Livermore."

Brooks' all-hands meeting will be rebroadcast on Lab TV, Channel 2 beginning today (May 26) through Tuesday, May 30, at 4 and 10 a.m., noon 2, 4 and 8 p.m.

Laboratory launches transition Website, newsletter

In response to the issuance of the draft Request for Proposal for the management contract, the Laboratory has launched a special Website, including a message from Lab Director George Miller, to provide information to employees regarding the transition process.

The Website also includes frequently asked questions, up-to-date news, archival material related to the selection process and transition to the new contractor, and links to related UC and NNSA sites.

The site is at http://transition.llnl.gov/home/ and is linked from the Lab's My LLNL portal home page: https://portal.llnl.gov/portal/MYLLNL/FRONT_PAGE.

To keep employees informed about the contract process, the Laboratory will distribute the first edition of the *Contract Process Newsletter: Preparing the Lab Community for Change on* Wednesday, May 31, via Lab mail.

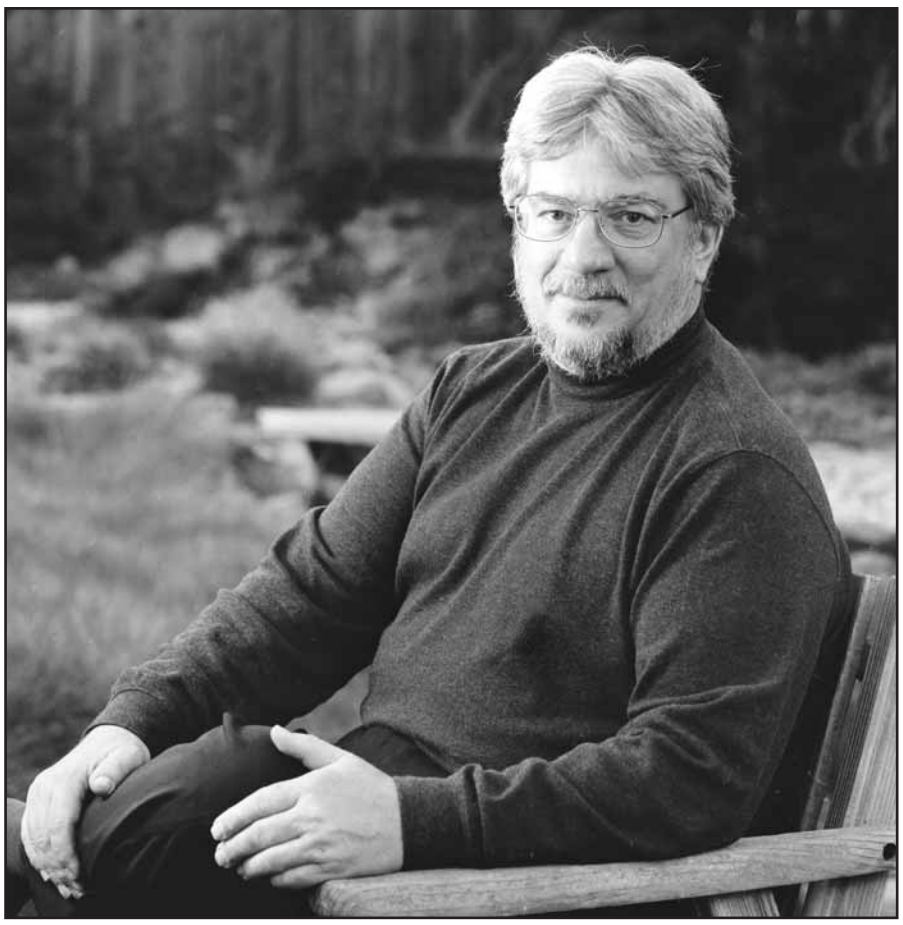
The print newsletter will include: a recap of recent important events and milestones; answers to commonly asked questions; important events coming up; employees' roles and responsibilities during the contract process; and pointers to other sources of information.

Employees will receive the newsletter until the contract process and the transition to a new contractor is complete. The print edition is primarily intended for those employees who do not have regular access to computers.

IN PROFILE

‘Physicist of a different order’ bids farewell to the Lab

By Lynda Seaver
Newsline staff writer



JACQUELINE MCBRIDE/NEWSLINE

> *It’s hard to leave, and the hardest part is leaving the people.*
>
> *– Michael Anastasio*

It wasn’t long after Michael Anastasio arrived at LLNL that those closest to him knew they had found a physicist of a different order.

Sure, he had the requisite expertise, the dedication to his science — in short, the “passion for mission” that has come to be the prime Lab value.

But there were other telltale signs: A desire to share ideas that suggested team building. A willingness to learn that suggested compassion and understanding. And a constant quest for improvement that showed a natural-born leader.

Finally, there was the lunchtime playing of his recorder behind the closed door of his office, which suggested a bit of humanity and love of music.

“In just about everyone you can find some negatives,” said Seymour Sack, a retired physicist who was a leader in B Division and responsible for much of the modern U.S. stockpile when Anastasio came to the Lab more than 25 years ago. “But in Mike there were no negatives. There still aren’t. He’s always been the preferable guy.”

The partnership that will run Los Alamos National Laboratory saw those same qualities. On June 1, Anastasio will take on the role of director of the New Mexico laboratory when Los Alamos National Security Limited Liability Corporation (LANS, LLC) assumes its management.

For LANS, LLC there was only one choice to lead the way.

“When it came time to choose a leader for the LANS, LLC bid, the University of California and Bechtel looked immediately to Mike,” said Bruce Darling, UC’s senior vice president of University Affairs. “He is highly respected throughout UC and the DOE complex. His commitment to science in the national interest and his understanding of the work at Los Alamos made him the only choice.”

“Throughout his career Mike always has been a strong leader,” added Director George Miller. “I can think of no better person who can take on the role of director at Los Alamos and lead it into a new era of scientific and operational excellence. We are sorry to see Mike go, and we wish him the best.”

Anastasio said his final goodbyes to the Laboratory yesterday, during an almost full day of ceremonies honoring him. Throughout the day he displayed the same mixed feelings he showed back in December, when he first announced he would leave to begin transition of Los Alamos to the new contractor.

PAYING TRIBUTE–
See page 6

“It’s hard to leave, and the hardest part is leaving the people,” he often said. “It is the people who make this place great, that have that passion for mission.”

But he has always welcomed a challenge — and the one that comes with converting a national laboratory long associated with a university manager to one managed by a corporate partnership has been well documented.

“Mike knows how to choose the right people and he knows how to get the best out of them,” said Hal Graboske, who was Anastasio’s deputy director of Science & Technology before retiring in 2004. “He’s thoughtful and thorough and he makes sure he has maximum understanding of the issue.

“I like to think of him as a bit of a Zen master,” Graboske added. “He is quiet and controlled, almost removed in a way. He can be sitting in a room with you but it always seems like he’s behind some kind of screen. Yet he still has this way of pointing you in the right direction.

“No matter what problem the Lab faces, he knows the best solution, but he wants his team to get to that same place. He won’t come out and say what he is thinking. He wants his team to come up with it. He has this way of shaping development without ever speaking of it directly. He stimulates and nurtures but never commands.

“It’s great team building. It’s great leadership, and it leads to great science.”

Graboske, who had been at LLNL for almost 40 years, recalls the Lab going through “tough times since our beginning, but the last five years have been highly stressful.” Funding issues regarding the National Ignition Facility, supercomputing and other national security programs, issues of lost keys, and various security and safety snafus “can cause a director to pay a price in longevity,” Graboske quipped. “He had a lot to choke down, but he got us through some tough times and the respect the Lab has is largely due to him.”

Graboske believes two of Anastasio’s greatest accomplishments have been his involvement as a principal author of the Reliable Replacement Warhead and “the ringmaster” for the Laboratory’s values, developed by senior managers in 2003.

“Mike was always big on values,” Graboske said. “He wanted everyone to know what this Laboratory stood for and what was expected of us. Those values became our wakeup call. Once we had those values written down, once we had those on posters and badge cards, we really had to walk the talk.

“Those values, especially the passion for mission, they were already his,” Graboske said.

Lloyd Multhauf, a retired physicist and longtime friend, says Anastasio combines two things important to any manager: “He doesn’t pass off responsibility and he always wants input. I’ve never seen him come into anything with a closed mind or preconceived notion. He’s always looking for a new approach.”

But there are unknown qualities that make him equally endearing. Multhauf chuckles when he recalls “the smartest guy you’d ever meet,” but then “he would have complete trouble understanding how a seatbelt worked. He was in my car one day with me and my daughter and he could not figure out how to work the seatbelt. It amused my daughter to no end to see this smart guy stumble over simple mechanics.”

Kinnon Ernst, who supported Anastasio for two years of his tenure, fondly recalls the way he always knew a lot about everything. “I found it amazing that he seemed to be extremely knowledgeable about every program and organization at the Lab and what they are all about. I used to joke with him about the label a *Science* magazine writer gave him when he was named as the LANS President, ‘the most powerful scientist in the world.’ I joked, but I knew it was becoming true.”

Then there was the way he casually crouched on his knees on the seat of his chair, and leaned over the back as he listened to employees in his office. “He had

See **ANASTASIO,** *page 6*

SCIENCE NEWS

Nanotube membrane has many potential uses

By Anne M. Stark
Newsline staff writer

A nanotube membrane on a silicon chip the size of a quarter may offer a cheaper way to remove salt from water.

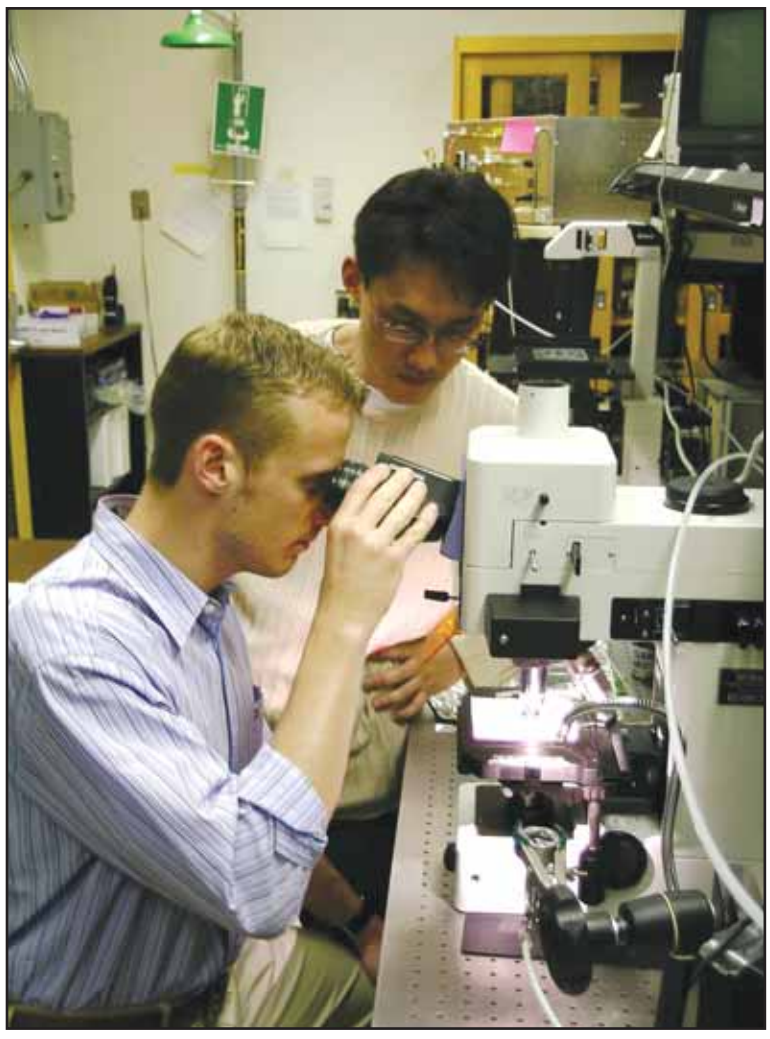
Laboratory researchers have created a membrane made of carbon nanotubes and silicon that may offer, among many possible applications, a less expensive desalinization.

The nanotubes, special molecules made of carbon atoms in a unique arrangement, are hollow and more than 50,000 times thinner than a human hair. Billions of these tubes act as the pores in the membrane. The super-smooth inside of the nanotubes allows liquids and gases to rapidly flow through, while the tiny pore size can block larger molecules. This previously unobserved phenomenon opens a vast array of possible applications.

The team was able to measure flows of liquids and gases by making a membrane on a silicon chip with carbon nanotube pores making up the holes of the membrane. The membrane is created by filling the gaps between aligned carbon nanotubes with a ceramic matrix material. The pores are so small that only six water molecules could fit across their diameter.

"The gas and water flows that we measured are 100 to 10,000 times faster than what classical models predict," said Olgica Bakajin, the Livermore scientist who led the research. "This is like having a garden hose that can deliver as much water in the same amount of time as a fire hose that is 10 times larger."

The research resulted from collaboration between Olgica Bakajin and Aleksandr Noy, who were both recruited to the Lab as "Lawrence Fellows" — the Laboratory's initiative to bring in young talented scientists. The principal contributors to the work are postdoctoral researcher Jason Holt and Hyung Gyu Park, a UC Berkeley mechanical engineering graduate student and student employee at Livermore. Other LLNL co-authors included Yinmin Wang, staff scientist, Michael Stadermann, postdoctoral researcher, and Alexander Artyukhin, graduate student employee. The team collaborated with UC Berkeley's professor of mechanical engineering Costas Grigoropoulos. David Eaglesham, now at Applied Materials, also contributed in the early stages of this work.



MICHAEL STADERMANN/CMS

Jason Holt, left, and Hyung Gyu Park inspect a microfabricated carbon nanotube membrane chip with an optical microscope.

> *"This is like having a garden hose that can deliver as much water in the same amount of time as a fire hose that is 10 times larger."*
>
> *– Olgica Bakajin*

Membranes that have carbon nanotubes as pores could be used in desalinization and demineralization. Salt removal from water, commonly performed through reverse-osmosis, uses less permeable membranes, requires large amounts of pressure and is quite expensive. However, these more permeable nanotube membranes could reduce the energy costs of desalinization by up to 75 percent compared to conventional membranes used in reverse osmosis.

Carbon nanotubes are a unique platform for studying molecular transport and nanofluidics. Their nanometer-size, atomically smooth surfaces and similarity to cellular water transport channels make them exceptionally suited for this purpose.

"Since water does not wet the outside surface of carbon nanotubes, we were skeptical that water would enter into them, let alone flow really fast," Bakajin said. "But the molecular dynamics simulations in the literature predicted fast flow, so we wanted to test the predictions."

"The first time we set up an experiment with water, we left it overnight thinking that the water level above the membrane would not budge," Park said. "Instead, we came back in the morning and there was a little puddle on the floor under the membrane."

Holt added: "The first thing that came to mind was that the membrane broke, but fortunately it didn't. The membrane allowed water through and blocked gold nanoparticles that were just a bit larger than the nanotube pores."

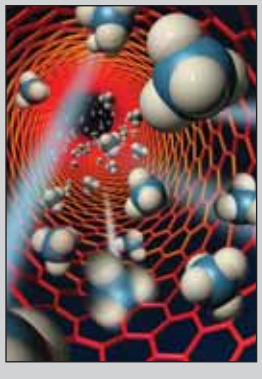
Simulations of gas and water transport through carbon nanotubes predict that each should flow rapidly. Gas molecules should bounce off its atomically smooth surface like billiard balls. Water molecules should slide through either because of the "slipperiness" of the carbon nanotube surface or due to molecular ordering induced by spatial confinement. The experiments performed by the LLNL team demonstrated these predicted rapid flows of gas and water through carbon nanotubes, but further research is needed to determine the exact transport mechanisms.

Another potential application for the membranes is in gas separation. The high gas permeability and its affinity to hydrocarbons may allow for lower-energy, industrial-gas separations. "Though our membranes have an order of magnitude smaller pore size, the enhanced flow rate per pore and the high pore density makes them superior in both air and water permeability compared to conventional polycarbonate membranes," Bakajin said.

The research appears on the cover of the May 19 edition of the journal *Science*.

ON THE COVER:
AN ARTIST'S RENDERING OF METHANE MOLECULES FLOWING THROUGH A CARBON NANOTUBE LESS THAN TWO NANOMETERS IN DIAMETER.

ARTWORK BY SCOTT DOUGHERTY, TID.



SCIENCE NEWS

Rapid diagnosis for livestock diseases devised

By Stephen Wampler
Newsline staff writer

Laboratory scientists, in partnership with two federal departments (Homeland Security and Agriculture) and UC Davis, have developed a rapid diagnostic test that simultaneously tests for foot-and-mouth disease and six other look-alike diseases in livestock.

The new candidate test, which is still undergoing the process of validation, reduces the period for diagnosing all seven diseases from days to hours, and could significantly reduce costs.

In addition to the test, team researchers have made two other important advances — in testing samples and tracking samples — that could provide a major boost in routine agricultural disease surveillance and fighting any instances of agroterrorism.

The U.S. Department of Homeland Security (DHS) has funded the effort to develop high-throughput multiplexed assays for early detection of foreign animal diseases, such as foot-and-mouth disease.

The technology development was announced Thursday morning during a press conference at UC Davis that featured speakers from UC Davis, LLNL, DHS and the U.S. Department of Agriculture.

"While still in the development phase, this collaborative project between the DHS Plum Island Animal Disease Center, LLNL, UC Davis, the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service and the National Animal Health Laboratories Network (NAHLN) will significantly enhance the future security of U.S. agriculture by providing improved technology for animal disease diagnostics," said Tammy Beckham, deputy director of Science for the DHS at the Plum Island Animal Disease Center.

"The test provides a tool that could be used for surveillance, which would significantly enhance the nation's capacity for early detection of foot-and-mouth disease (FMD)," said LLNL veterinarian and team member Pam Hullinger. "Finding the first case of FMD as soon as possible is critical to minimizing the scope and impact of an outbreak."

PHOTOS BY JOSEPH MARTINEZ/TID

LLNL veterinarian Pam Hullinger, one of the speakers at Thursday's press conference, prepares to show how swab samples are taken from cattle to check for foot-and-mouth disease.

One estimate is that the U.S. would lose up to $3 million in direct costs for every hour's delay in diagnosing FMD.

Barbara Martin, the NAHLN coordinator for the USDA, also stresses how the test or assay, once it is deployed to the NAHLN, would assist detection.

"With an assay capable of detecting a foreign animal disease, we'll be able to detect it early, and reduce the spread and the economic impact of the disease," Martin said.

Tammy Beckham, deputy director of Science for the U.S. Department of Homeland Security at the Plum Island Animal Disease Center, was one of the main speakers at Thursday's press conference at UC Davis.

Under current procedures, if a foreign animal disease is suspected in livestock, tests are first conducted for the foreign animal disease and later, if the tests are negative, then tests are conducted for domestic diseases that resemble FMD.

Once approved, with the multiplex assay NAHLN laboratories could test for all seven diseases at the same time — within about five hours.

The concept of an assay that could test for multiple livestock diseases grew out of the 2001 outbreak of FMD in the United Kingdom that caused about $5 billion in losses to the food and agriculture sector and even greater losses in tourism. Up to 10 million sheep, pigs and cows were slaughtered, and for several months, the nation was banned from exporting livestock and animal products that could potentially transmit the virus.

"What the U.S. veterinarians who went to England really wanted was a test for confirming FMD with a quick turnaround, so they could make a decision on how to handle the individual farms," said Alex Ardans, director of the UC Davis-operated California Animal Health and Food Safety Laboratory System.

UC Davis researchers helped to provide vision and key direction for the assay's development and also provided samples of domestic livestock viruses, which were important in the development of the multiplex assay.

The assay screens for both DNA and RNA viruses at the same time and uses 17 signatures — or unique regions of DNA or RNA — to assist in detecting FMD and the six other diseases that resemble FMD.

Three of these are the foreign diseases —FMD, vesicular exanthema of swine and swine vesicular disease. Four are the endemic diseases of bovine viral diarrhea, bluetongue, bovine herpes-1 and the parapox virus complex.

Initial studies to determine the performance characteristics of the assay are being performed at LLNL, DHS' Plum Island Animal Disease Center, NVSL and within the NAHLN. For the work, Plum Island provided scientific expertise, vision, viral isolates and lab space.

Development work is continuing at LLNL and Plum Island.

FMD is an extremely contagious viral disease of cattle, pigs, sheep, goats, deer and water buffalo. Animals afflicted with FMD usually do not die, but the disease is debilitating and animals do not recover. The vaccine for FMD only reduces the severity of symptoms; it does not prevent infection or completely stop

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Paying tribute

John Foster

Bruce Tarter

Photos by Jacqueline McBride, Newsline

Friends, colleagues, former Lab directors and dignitaries from UC and DOE packed the Bldg. 123 auditorium Thursday to say farewell and thank you to LLNL's 9th Director — Michael Anastasio, soon to be the ninth director of the Los Alamos National Laboratory.

Laboratory Director George Miller kicked off the celebration noting that Anastasio is practical, fearless and recognized around the country for his expertise. "It has been a great pleasure to watch Mike's career advance at the Lab."

Bob Kuckuck, director of the Los Alamos National Laboratory, drew laughter from the audience when he said, "In New Mexico, the Indians will probably name Mike the man of many words," referring to Anastasio's fondness for long talks and meetings.

Bob Kuckuck

Also in attendance, paying tribute to Anastasio's many accomplishments at LLNL and wishing him good luck at LANL were: former Laboratory directors John Foster and Bruce Tarter; Camille Yuan-Soo Hoo, DOE manager, Livermore Site Office; Victor Reis, senior adviser, DOE; Ambassador Linton Brooks, NNSA administrator; and Bruce Darling, senior vice president of UC.

Pictured above, Anastasio accepts presented by Miller — a framed picture of a Livermore Valley scene and a portrait of himself, a copy of which will be placed alongside the photos of former Lab directors in Bldg. 111.

Anastasio's wife, Ann, and his daughter, Alex, also attended the ceremony.

"I have mixed emotions," Anastasio concluded. "I have deep personal feelings about this Laboratory. In the end, it's all about the people. Thank you."

ANASTASIO

Continued from page 3

this way of giving you his complete attention," Ernst said. "And it didn't matter who was waiting outside to see him. He would make sure you had everything you needed from him before going on to the next appointment."

Multhauf said these were qualities that he has had "from the beginning. Mike once told me I taught him, and I consider that a great compliment. But there was never any teaching of Mike. He had it from the start."

That start began in 1980, when, after earning a Ph.D. from Stony Book University in New York and doing post-doctoral research in Europe, Anastasio landed in B Division. For the next 11 years he worked on boost physics, or developing a more fundamental understanding of the performance of materials subjected to extreme pressures that occur during a nuclear event. During this period he helped design three weapons in the current stockpile. In 1991 he moved up to B Division/B Program leader, and in 1993 he helped the Department of Energy develop its Stockpile Stewardship Program.

In 1995, he was the scientific adviser to the assistant secretary of Energy for Defense Programs. In 1996, he was named associate director for Defense and Nuclear Technologies, and in 2001 he was named deputy director for Strategic Operations. In 2002, he was named Lab director, just in time to help the Lab celebrate its 50th anniversary.

Anastasio cites as one of the top achievements during his watch the development and deployment of the Stockpile Stewardship Program. One example was the refurbishment of the W87 warhead, the first done under the nuclear testing moratorium, extending its shelf life by three decades. "In the order of 10 years we made some tremendous advances that changed the way we approached confidence in the U.S. deterrent," he said.

Away from the Lab he is known for his passion for classical music — hence the noontime recorder sessions — and has an extensive library of recordings. He and his wife Ann also have been active supporters of community music groups, among other volunteer efforts. Both his daughters played violin for the Livermore community orchestra; his youngest daughter, Alex, interns summers at the Lab while earning a teaching credential, while his oldest daughter, Alison, is working on her Ph.D. in Chicago.

Anastasio also is a sports enthusiast, with his most recent focus on racquetball. Ernst recalls evenings when he'd close his office door to change, only to pad back out dressed in half suit, half gym clothes. He always had good intentions to get in his exercise on time, but often, Lab business would postpone his court time with late-night actions.

Though Anastasio's announcement to leave came as an initial surprise, Graboske now believes his move to Los Alamos was "inevitable. I can't think of anyone else to take on this challenge. I'm sure it was painful for him to leave — he put so much of himself into his work and into the Lab. But he's a patriot and he's always been intensely loyal to national security. He's doing what's best for both labs."

Deaf now benefit from technology

In recognition of Deaf Awareness Week, Chris Moreland, M.D., one of 30 deaf medical doctors in the United States, presented a talk entitled,"How Technology Paved the Way" on Wednesday at the Laboratory.

A graduate of the University of Texas Medical School and currently a first-year resident physician at the UC Davis Medical Center specializing in internal medicine, Moreland discussed how far technology has come and what opportunities are now available to the deaf.

Closed captioning, electronic mail, a cochlear implant and a specially designed digital stethoscope are some of the technological breakthroughs that he used during his successful progression through college and medical school.

Moreland was introduced by Cathy McClain-Kaplan, medical interpreting specialist and former disabilities services manager at the Lab. McClain-Kaplan worked at LLNL for 25 years prior to taking the position as one of Moreland's interpreters earlier this year. The talk was sponsored by the Work-Life Center.

JACQUELINE MCBRIDE/NEWSLINE

Christopher Moreland, M.D., a deaf physician at UC Davis Medical Center, uses sign language, along with interpreters, to discuss how technology has advanced opportunities for the deaf.

Central Cafe to offer Time Zone kiosk

Employees will soon have more than food to select from at the Central Cafe.

On Monday, June 5, the Livermore Laboratory Employee Services Association (LLESA) will open a Time Zone satellite kiosk in the dining room across from the Java Wave coffee bar.

LLESA will conduct sales out of the Central Cafe from 11:30 a.m. to 1:30 p.m. Monday-Friday. The kiosk will offer apparel, logo items, specialty cards, stamps, See's candy and other items. Employees who have received recognition gift vouchers will be able to redeem them at the kiosk as well as the main store.

Opening a LLESA kiosk in the Central Cafe has been made possible by the collaboration of Steve Goodman, LLESA general manager, and Business Services' Stu Jossey, Employee Services division leader, and Michelle Quick, Food Services group leader.

Hours for the Time Zone, located in Trailer 4128, remain unchanged: 7:30 a.m.-3 p.m., Monday, Wednesday and Friday and 9 a.m.-5 p.m. Tuesday and Thursday. The main store also offers additional services: package receiving, UPS shipping and dry cleaning.

NEWSLINE

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PEOPLE NEWS

IN MEMORIAM

John B. Verity

John Verity, a former manager in the Technical Information Department who retired in 1990 after 27 years at the Lab, died May 5. He was 77.

A resident of Livermore, Verity was born in Los Angeles Oct. 17, 1928. He enjoyed jazz music and, while his health permitted, played piano in a Dixieland group. He also played guitar and enjoyed reading and cooking. He was a member of the First Presbyterian Church of Livermore.

He is survived by his wife of 42 years, Carol; his son, Steven Verity, and wife, Patti, of Santa Clara; his daughter, Diana Verity of Torrance; his brother, David Verity, and wife, Sue, of Los Angeles; and his sister-in-law, Kay Verity.

Donations may be made in his memory to the National Kidney Foundation of Northern California, 131 Stewart St., Suite 520, San Francisco, CA, 94105.

May is stroke awareness month

Stroke is the nation's No. three killer and a leading cause of severe, long-term disability.

Stroke caused more than 157,000 deaths in 2003, and is estimated to cost more than $57 billion in both direct and indirect costs in 2006. Each year about 500,000 persons suffer a first stroke and about 200,000 suffer a recurrent stroke.

Risk factors for stroke include high blood pressure; cigarette smoking; excessive alcohol intake; increasing age; prior stroke or heart disease; diabetes; family history of stroke; and socioeconomic disadvantage. The risk of death and disability can be reduced if stroke victims receive prompt appropriate treatment.

People can help reduce the incidence of death from stroke by educating themselves and others about the warning signs and, when they occur, getting medical care as soon as possible. If you, a fellow worker or family member have sudden onset of any of the neurological symptoms shown above, call 911 immediately to begin evaluation for possible stroke and treatment. The sooner treatment can start, the greater the likelihood of a complete recovery, or at least a decrease in the devastating impact of stroke.

For more information on stroke, including prevention measures, visit any of the following Websites:

American Stroke Association: http://www.strokeassociation.org/presenter.jhtml?identifier=1200037; National Institute of Neurological Disorders and Stroke: http://www.ninds.nih.gov/; Centers for Disease Control and Prevention: http://www. cdc.gov/stroke/announcements/stroke_awareness_month.htm.

Recognizing stroke signs

Learn to recognize a stroke and act quickly:

- Sudden numbness or weakness of the face, arm or leg, especially on one side of the body.
- Sudden confusion, trouble speaking or understanding.
- Sudden trouble seeing in one or both eyes.
- Sudden trouble walking, dizziness, loss of balance or coordination.
- Sudden, severe headache with no known cause.

NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE

SCIENCE NEWS

JOSEPH MARTINEZ/TID

LLNL's Pam Hullinger demonstrates the scalable, high-throughput system that allows for the processing of up to 1,000 samples within 10 hours.

Assay development was a team effort

A large multidisciplinary team of Livermore biologists, computer scientists, physicists and others played key roles in developing the rapid diagnostic test for foot-and-mouth disease and six other livestock diseases.

The assay team: Daisy Beckwith, Paul Butler, Celena Carrillo, Corey Chinn, Jason Olivas, James Thissen, Sally Smith, Sally Hall and Josue Ortiz. Two other team members are based at other institutions: Max Rasmussen, at the Plum Island Animal Disease Center; and Aisha Hajjig, at the U.S. Army Medical Research Institute of Infectious Diseases.

Virology: Maher Elsheikh, Michelle Gookin, Lynn Suer, Kris Montgomery, Brent Ricks and Gilda Espejon-Vanier.

High-throughput capacity: Christina Sanders, Brian Harrel, Lance Tammero, Janelle Heaney, and two others (Jaqui Lee and Ryan Mahnke) who recently left LLNL.

Bioinformatics: Beth Vitalis, Clinton Torres, Linda Danganan, Jason Smith, David Hysom, Marisa Lam, Shea Gardner.

Project management: Raymond Lenhoff, Pam Hullinger, Ben Hindson, Pejman Naraghi-Arani, Mary McBride, Julie Perkins, Tom Slezak.

Administrative support: Deborah Walsh, Christina Parsons, Barbara K. Wallace.

DIAGNOSIS

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transmission of the disease.

"The availability of a validated, rapid test for detecting FMD and differentiating it from other diseases that present similar clinical signs would be invaluable," said LLNL analytical chemist and team member Ben Hindson.

As part of its validation process, the assay has been sent to 13 NAHLN labs and the USDA Foreign Animal Disease Diagnostic Laboratory, which participated in an interlaboratory comparison and will be performing follow-on evaluations of the test. In the months to come, the USDA's Animal and Plant Health Inspection Service will determine how the assay will be used.

For the assay, one other important collaborator has been Canada's National Center for Foreign Animal Diseases based in Winnipeg. The National Center provided research space and access to its extensive library of samples from FMD-infected animals. It has also assisted with the development of other assays.

Beyond the assay, the interagency team also has developed a high-throughput, semi-automated system that permits the analysis of 1,000 animal specimen samples within a 10-hour period using two robotic workstations and two technicians.

This platform increases the normal sample processing capacity by about 10-fold per day.

"Timely and scalable diagnostic surge capacity is a critical component of any animal health emergency response," Ardans noted, adding that with more workstations and technicians many more samples could be processed.

One added benefit of the team's new high-throughput capacity is that the platform is adaptable for use with other assays, including those that test for human diseases, and hence could contribute to any public health system response.

The other important advance is the integration with USDA's information technology system — for tracking animal samples — that has been developed by the federal department between 2003 and 2006.

"The goal is for veterinarians or animal health officials to be able to take and track a sample from an animal all the way through the process — from the animal to the lab to the diagnostic test and to the transmission of the results," said USDA's Martin.

With this capability, the sample could be rapidly traced back to the herd of origin and the affected animal, thus minimizing the risk of the disease's spread, according to Martin.

The USDA is using a standardized sample tracking and reporting process — with bar codes to identify each sample — and relies upon a secure network to transmit information to laboratories in the NAHLN system.

Cyber Security Day to raise awareness

On Tuesday, May 31, Laboratory Director George Miller will kick off a special Cyber Security Day in the Bldg. 123 auditorium from 10:30 to 11:30 a.m.

Miller will open the program, and emphasize that — now more than ever — cyber security is every Lab employee's responsibility. The Cyber Security Program is hosting the event.

According to Chief Cyber Security Officer Mark Graff, the meeting will kick off a "Summer of Cyber Security," 100 days of cyber-security awareness events and technical initiatives. Graff's short talk, "Don't Be Fooled," will discuss social engineering and how to protect against it, explaining to employees why this phenomenon represents an especially ominous threat currently focused at the Laboratory. Colleague Matt Myrick will discuss the cyber-perils of MySpace and similar locales on the Internet.

Graff says for about a half-hour at the conclusion of the program, he and his staff will answer employee questions "…on any cyber security topic. Please, bring us the hard ones," Graff requests. "We'll do everything we can to explain the 'why' and 'how' behind our cyber security measures to help everyone protect the Laboratory."

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